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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,734	04/02/2004	Devabhaktuni Srikrishna	TROPOS-1009-1	1391

7590 05/13/2008
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EXAMINER

CHU, WUTCHUNG

ART UNIT	PAPER NUMBER
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2619

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/816,734	Applicant(s) SRIKRISHNA ET AL.	
	Examiner WUTCHUNG CHU	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4, 5, 9, 11 - 18, 21-26, 28 - 39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 9, 11 - 18, 21-26, 28 - 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/21/2008 has been entered.

Priority

2. Applicant's claim for domestic priority under 35 U.S. C. 119(e) is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 5, 9, 11 - 18, 21-26, 28 – 39 are rejected under 35 U.S.C. 102(b) as being anticipated Toh by (59870110).

Regarding claim 1, Toh discloses routing method for Ad-hoc mobile networks (see col. 3 lines 2-12) comprising:

- each gateway originating and broadcasting beacons over a plurality of channels (see col. 6 lines 7-21 and col. 12 lines 34-43), the beacons being

broadcast over each of the plurality of channels at a predetermined rate (**see col. 8 lines 16-20**);

- the access node receiving over a plurality of channels, beacons from at least one upstream access node or gateway, the beacons providing information of selected upstream paths to at least one of the plurality of gateways (**see col. 6 lines 48-67**); and
- the access node selecting a of routing paths between the access node and at least one of the plurality of gateways (**see col. 3 lines 39-56**), based on a persistence of successfully received beacon, the selected routing paths including a multiple channels (**see col. 7 lines 59-64**);
- the access node re-broadcasting beacons corresponding to the selected routing path, over each of the plurality of channels (**see col. 6 lines 7-21**).

Regarding claims 2, 18, 26, and 33, Toh teaches the plurality of channels comprises transmission channels according to at least two of 802.11(a), 802.11(b), 802.11(g), 802.11(n) transmission protocols (**see col. 18 line 36**).

Regarding claim 4, Toh teaches the selection criteria is additionally based upon an information throughput of the routing paths (**see col. 17 line 58 – col. 18 line 20**).

Regarding claim 5, Toh teaches the selection criteria is additionally based upon a number of hops of the routing paths (**see col. 17 line 58 – col. 18 line 20**).

Regarding claim 9, Toh teaches beacons that are successfully received by the upstream access nodes are rebroadcast by the upstream access nodes over multiple channels after the beacons have been modified to include selected upstream routing information of the upstream access nodes (**see col. 6 line 48 – col. 7 line 16**).

Regarding claim 11, Toh teaches selected upstream paths between each upstream access node and upstream gateways includes a combination of paths, over multiple channels (**see col. 6 lines 48-60**), and upstream paths are selected based on a persistence of successfully received broadcast and rebroadcast beacons (**see col. 7 lines 43-50**).

Regarding claim 12, Toh teaches selected upstream paths between each upstream access node and upstream gateways are selected based upon path quality (**see col. 6 lines 33-60 and col. 17 line 58 – col. 18 line 20**).

Regarding claim 13, Toh teaches the path quality is determined by an information throughput of the upstream paths (**see col. 17 line 58 – col. 18 Line 20**).

Regarding claim 14, Toh teaches the path quality is determined by a number of hops included within the upstream paths (**see col. 17 line 58 – col. 18 Line 20**).

Regarding claim 15, Toh teaches further comprising the access node transmitting a modified ~~indicator~~-beacon over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway (**see col. 6 lines 7-21 and col. 7 lines 59-64**).

Regarding claim 16, Toh teaches further comprising:

- sending a reverse beacon to the gateway (**see col. 6 lines 8-10**); and
- constructing a client tree in the gateway, wherein the gateway has at least one path including multiple channels to all clients (**see col. 7 lines 52-64**).

Regarding claim 17, Toh discloses routing method for Ad-hoc mobile networks (**see col. 3 lines 2-12**) comprising:

- each gateway originating and broadcasting beacons over a plurality of channels (**see col. 6 lines 7-21 and col. 12 lines 34-43**), the beacons being broadcast over each of the plurality of channels at a predetermined rate (**see col. 8 lines 16-20**);
- each access node receiving over a plurality of channels, beacons from at least one upstream device (**see col. 6 lines 8-10**);
- if the at least one upstream device is an upstream access node, the indicators providing information of selected upstream paths between each of the upstream access nodes and upstream gateways (**see col. 6 lines 48-60**); and
- each access node determining an optimal set of routing paths between the access node and at least one upstream gateway, based upon a persistence of successfully received indicators, the optimal set of routing paths including a combination of paths over multiple channels (**see col. 6 lines 48-60 and col. 7 lines 59-64**).

Regarding claim 21, Toh teaches the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information (**see col. 6 line 48 – 7 line 16**).

Regarding claim 22, Toh teaches selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels (**see col. 6 lines 48-60**).

Regarding claim 23, Toh teaches further comprising the access node transmitting a modified beacons over a plurality of channels, the modified beacons including the selected routing paths between the access node and the at least one upstream gateway (**see col. 6 lines 7-21 and col. 7 lines 59-64**).

Regarding claim 24, Toh teaches further comprising

- sending a reverse beacon to the gateway (**see col. 6 lines 8-10**); and
- constructing a client tree in the gateway, wherein the gateway has at least one path including multiple channels to all clients (**see col. 7 lines 52-64**).

Regarding claim 25, Toh discloses routing method for Ad-hoc mobile networks (**see col. 3 lines 2-12**) comprising:

- a plurality of radios operable on a plurality of transmission channels, the radios simultaneously receiving over each of a plurality of channels, indicators from at least one upstream access node, the indicators providing

information of selected upstream paths between each of the upstream access nodes and upstream gateways (**see col. 6 lines 48-67**); and

- means for determining an optimal set of routing paths between the access node and at least one upstream gateway (**see col. 3 lines 39-56**), based upon a persistence of successfully received ~ indicators, the optimal set of routing paths including a combination of paths over multiple channels (**see col. 7 lines 59-64**).

Regarding claim 28, Toh teaches the indicators comprise beacons originating at the upstream gateways (**see col. 6 lines 7-21 and col. 12 lines 34-43**).

Regarding claim 29, Toh teaches the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information (**see col. 6 lines 7-21 and col. 7 lines 59-64**).

Regarding claim 30, Toh teaches selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels (**see col. 6 lines 48-67**).

Regarding claim 31, Toh teaches further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway (**see col. 6 lines 7-21 and col. 12 lines 34-43**).

Regarding claim 32, Toh discloses routing method for Ad-hoc mobile networks (**see col. 3 lines 2-12**) comprising:

- at least one gateway, each gateway transmitting beacons through each of a plurality of transmission channels at a predetermined rate (**see col. 6 lines 7-21 and col. 12 lines 34-43**);
- a plurality of access nodes, each access node receiving beacons through at least one of the transmission channels (**see col. 3 lines 39-56**), each access node selecting routing paths based upon a persistence of successfully received beacons, the routing paths selected from the plurality of transmission channels, the selected set of routing paths including a combination of paths over multiple channels (**see col. 7 lines 59-64**); and
- a client, the client receiving beacons through at least one of the transmission channels from at least one of the access nodes (**see col. 6 lines 7-21**).

Regarding claim 34, Toh teaches the access node determining an optimal set of routing paths comprises determining a path quality of the available paths, and selecting the optimal paths based upon a selection criteria (**see col. 6 lines 33-60 and col. 17 line 58- col. 18 line 20**).

Regarding claim 35, Toh teaches the indicators comprise beacons originating at the gateways (**see col. 6 lines 7-21 and col. 12 lines 34-43**).

Regarding claim 36, Toh teaches the beacons are retransmitted by the upstream access nodes after the beacons have been

modified to include selected upstream routing information (**see col. 6 lines 7-21 and col. 12 lines 34-43**).

Regarding claim 37, Toh teaches selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels (**see col. 6 lines 48-67**).

Regarding claim 38, Toh teaches further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway (**see col. 6 lines 7-21 and col. 7 lines 59-64**).

Regarding claim 39, Toh teaches the access node re-broadcasting beacons corresponding to the selected routing path, over each of the plurality of channels comprises:

- the access node adjusting a link quality and path quality (**see col. 17 lines 58-67**) associated with the received beacons based on whether beacons are received within a routing cycle (**see col. 8 lines 7-13**);
- the access node retransmitting modified beacons (**see col. 6 lines 8-10**) over each of the plurality of channels if the path quality is above a threshold (**see col. 6 lines 7-31**).

Response to Arguments

5. Applicant's arguments with respect to claims 1, 2, 4, 5, 9, 11 - 18, 21-26, 28 - 39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cheung et al. (5812531); Wang et al. (US6901048) disclose link-level protection of traffic in a packet-switched network. Belcea (US7212504) discloses time division protocol for an ad-hoc peer-to-peer radio network having coordinating channel access to shared parallel data channels with separate reservation channel. Corson et al. (US6667957) disclose adaptive routing method for a dynamic network; Haas (US6304556); Hong et al. (US6292508); Minnick et al. (US6370381); Goss (US7330693); Watson, Jr. (US7095732); Haartsen (2002/0075940).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WUTCHUNG CHU whose telephone number is (571)270-1411. The examiner can normally be reached on Monday - Friday 1000 - 1500EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571 272 7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2619

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WC/
Wutchung Chu

/Edan Orgad/

Supervisory Patent Examiner, Art Unit 2619